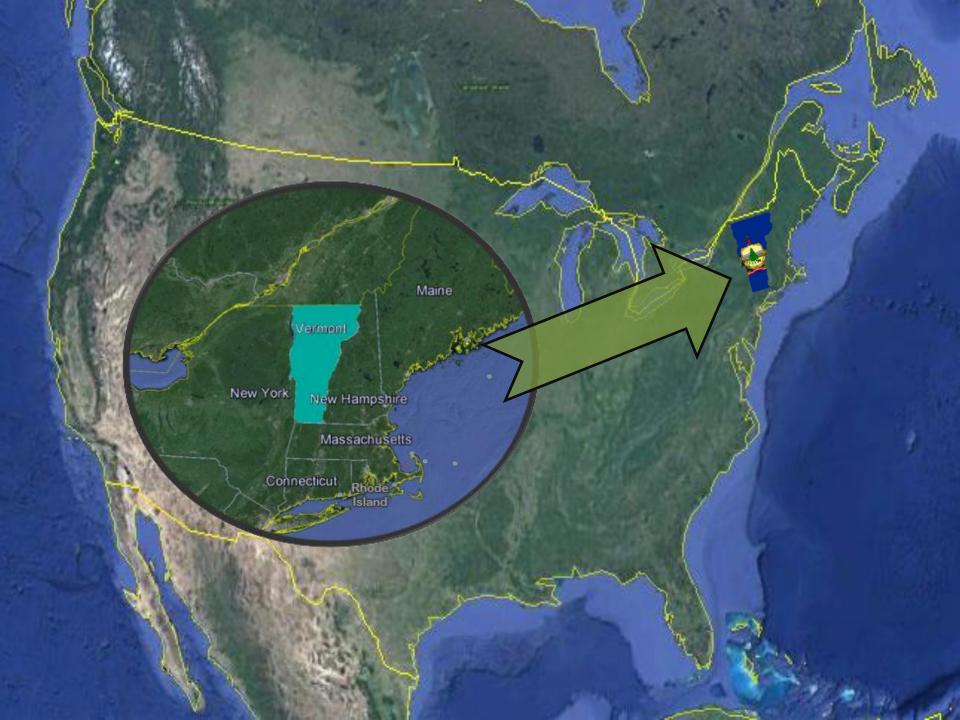
Vermont: A Grid in Transition

vermont electric power company



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July 27, 2017



Corporate structure: for-profit organized to deliver co-op benefits

Shareholders & Customers*

VT Distribution Utilities & VLITE†

VT DUs own 73% of VELCO & 98% of VT Transco (directly or through VELCO ownership); balance owned by VLITE

Vermont Corporation

VELCO

Vermont Electric Power Company, Inc.

- · Hires staff
- Manages VT Transco
- Owns & manages VETCO
- Manages Highgate Converter

Vermont Limited Liability Corporation

Vermont Transco LLC

 Owns transmission system assets

Vermont Corporation

VETCO

Vermont Electric Transmission Company, Inc.

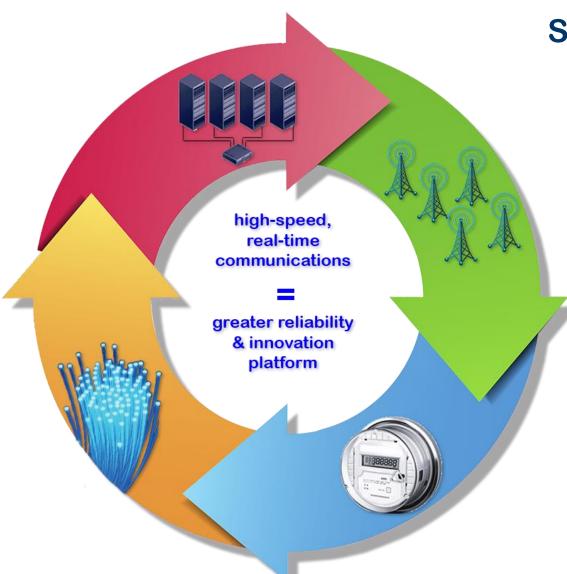
- Owns & maintains 52-mile direct current line in northeastern VT
- Bills New England utilities for DC line maintenance

* Vermont utilities are VELCO shareholders and customers. Minimal service (.5% of revenue) provided to New Hampshire Electric Cooperative and Public Service of New Hampshire.

†VLITE: VT Low Income Trust for Electricity, Inc.



Innovation workbench



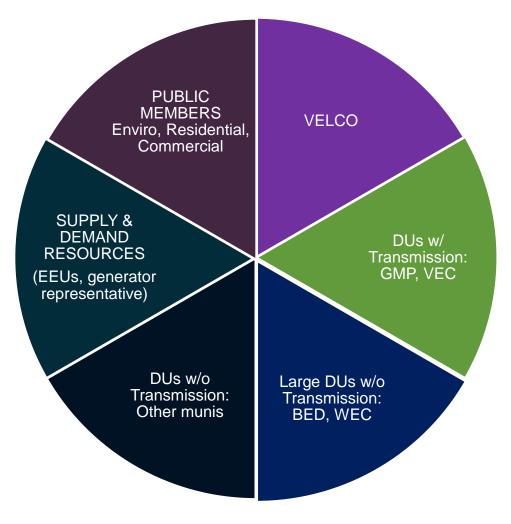
Statewide infrastructure

- eEnergy VT smart grid
 - 92-94% smart meters
- Fiber optic network
- Radio system
- High-performance computing cluster—HPCC



Vermont System Planning Committee

structure



Six sectors with equally weighted votes

Advisory votes:

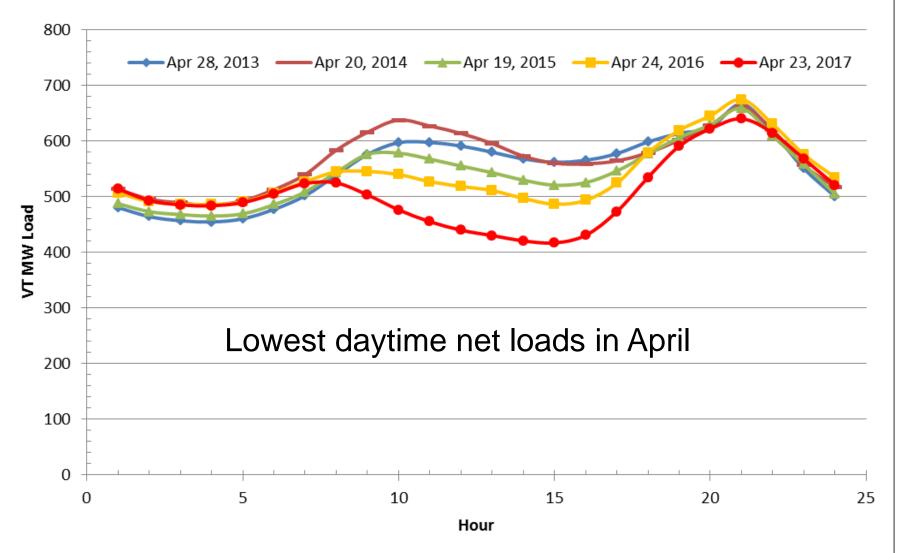
- Affected Utilities
- Solution selection
- Cost allocation
- ▶ Implementation strategy

Binding votes: (where utilities disagree)

- System level (bulk vs sub)
- Lead utility assignment.



Solar PV impacts in April Vermont Net Loads



Vermont Weather Analytics Center

A powerful weather, energy data and analytics platform built that utilizes four coupled models and leading-edge analytics to deliver the most precise and accurate wind and solar generation forecasts in the world. VWAC enables us to:



Increase grid reliability, community resiliency



Lower weather event-related operational costs

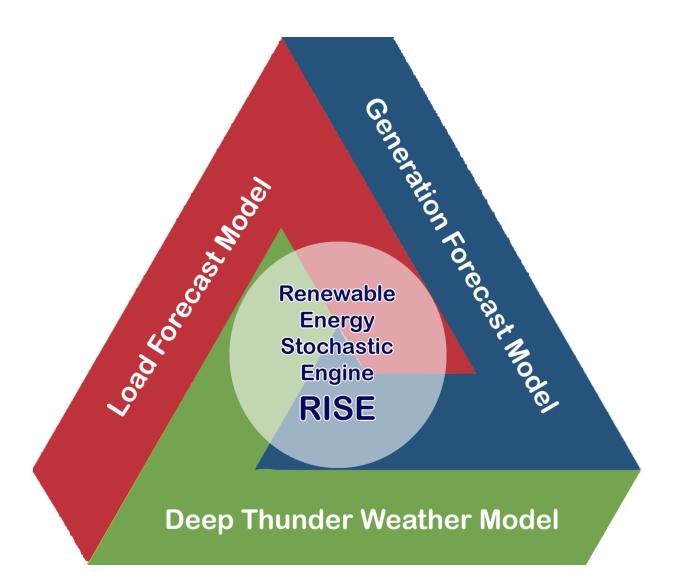


Garner full value from renewable generation





Vermont Weather Analytics Center







Demonstrated Benefits

Operations

- Improved outage scheduling
- Ability to determine grid capacity for additional solar on the transmission system down to substation level
- Demand analysis capability to substation level
- Short-term load forecast
- Contingency Analysis

Planning

- Increased reliability of planning assessments due to AMI data integration
- Improved NTA development
- Enabling ISO New England to improve day-ahead (over next 6 months)
- Statewide solar potential map both total expected energy output and irradiance volatility
- Storage potential analysis depicts system congestion and approximate size (but not cost) of a scaled storage solution.

Demand management

- Greater visibility to potential demand response events
- Increased peak management capability
- Efficiency measures validation



Joint Venture: Utopus Insights

Asset Analytics



Intelligent and intuitive network-wide asset analytics application

Renewable Forecasting



Accurate hyper-local renewable energy forecasting service

Energy Analytics Platform

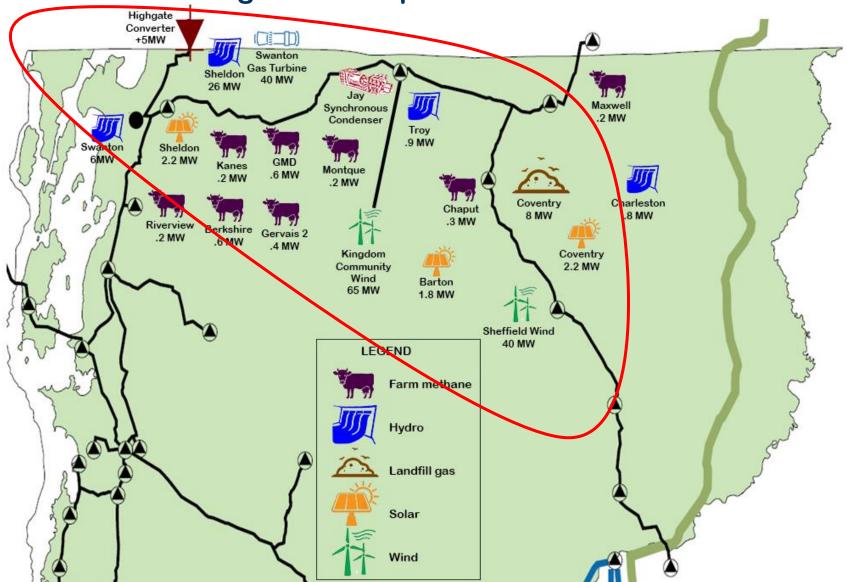


The most advanced and extensible hybrid SaaS/On-Premises/IoT energy analytics platform



Current Challenge:

SHEI area: new generation plus solar since 2005



Deliver Value



Leverage project management experience

Create and secure opportunities to leverage existing capabilities as provider of project management and other services



Embrace analytics

Comprehensively mine data and apply analytics to generate operational information of value to VELCO, DU customers and other stakeholders



Create greater fiber network value

Identify and secure opportunities to improve system reliability, enable owners to better serve customers and advance state broadband objectives

